

DOMINANT EDGE IDENTIFICATION FOR EFFICIENT PARTITION AND DISTRIBUTION

ABSTRACT OF THE INVENTION

5 A task management system, method and computer program product for
determining optimal placement of task components on multiple machines for task
execution, particularly for placing program components on multiple computers for
distributed processing. First, a communication graph is generated representative of the
computer program with each program unit (e.g., an object) represented as a node in the
10 graph. Nodes are connected to other nodes by edges representative of communication
between connected nodes. A weight is applied to each edge, the weight being a measure
of the level of communication between the connected edges. Terminal nodes
representative of the multiple computers are attached to the communication graph. Then,
dominant edges are identified within the communication graph. For any non-terminal
15 node, a connected edge is dominant if it is at least as heavy (its weight is greater than or
equal to) as the sum of the remaining non-terminal edges and the heaviest of the remaining
terminal edges. The min cut for the communication graph need not include any dominant
edges and so, dominant edges are removed from consideration for the final min cut
solution. Finally, program components which may be a single program unit or an
20 aggregate of units are placed on computers according to the communication graph min cut
solution.